

## **REMARKS**

In the Office Action, the Examiner rejected claims 1-13 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,741,496 to Hannah et al.

Applicants have amended claims 1, 4, 5, and 8. Claims 1-13 are pending in the above-captioned patent application.

At the outset, Applicants note that claim 1 has been amended to recite that “the hot electron generation unit [comprises] an insulation film and a conductive portion, the conductive portion penetrating the insulation film in a thickness direction of the insulation film.” In addition, claim 8, as amended, recites a method of writing data to a magnetic memory, the magnetic memory “including a hot electron generation unit, the hot electron generation unit including a conductive portion penetrating an insulating film in a thickness direction of the insulating film.” The method includes converting electrons into hot electrons by “causing the write current to flow through the conductive portion.” Support for the changes to claims 1 and 8 can be found, for example, in Fig. 6 and corresponding description in the specification at page 15, line 2 – page 16, line 7. Also, claim 4, which depends from claim 1, has been amended to further recite that the hot electron generation unit includes “two conductive layers sandwiching the insulation film, and the two conductive layers contact the conductive portion of the hot electron generation unit.” Support for the changes to claim 4, may also be found, for example, in Fig. 6, and page 15, lines 5-7. Claim 5 has been amended to be in independent form by incorporating the subject matter of original claim 1.

Applicants respectfully traverse the Examiner’s rejection of claims 1-13 under 35 U.S.C. § 102(e) as being anticipated by Hannah et al. Amended claim 1, for example, is not anticipated by Hannah et al. because the reference fails to teach each and every

element of the claim. In particular, Hannah et al. at least fails to teach the claimed hot electron generation unit comprising “an insulation film and a conductive portion, the conductive portion penetrating the insulation film in a thickness direction of the insulation film,” as recited in amended claim 1.

The Examiner contends that Hannah et al. discloses a “hot electron generation unit [which] includes an insulation film (energy gap) ... (col. 4, lines 41+).” Office Action at page 3. The cited portion of Hannah et al., however, teaches an “energy-gap which may be a *tunnel junction*.” Emphasis added. Col. 4, lines 40-49. According to Hannah et al., the tunnel junction includes “[m]aterials such as aluminum oxide, titanium oxide or tungsten oxide.” Col. 7, lines 63-64. Although these tunnel junction materials are disclosed as being insulators, Hannah et al. is silent as to any conductive portion penetrating such insulators. Accordingly, Hannah et al. fails to teach the claimed hot electron generation unit comprising “an insulation film and a conductive portion, *the conductive portion penetrating the insulation film in a thickness direction of the insulation film*” (emphasis added), as recited in amended claim 1.

Amended claim 8 recites a method of writing data into a magnetic memory. The magnetic memory includes “a hot electron generation unit, the hot electron generation unit including a conductive portion penetrating an insulating film in a thickness direction of the insulating film,” and the method includes converting electrons into hot electrons by “causing the write current to flow through the conductive portion.” Amended claim 8 is therefore similar to amended claim 1 in these respects, and is thus distinguishable over Hannah et al. at least for reasons discussed above in regard to claim 1.

In rejecting claim 5, the Examiner alleges, with reference to Figs. 8 and 10 and col. 3, lines 1+, that Hannah et al. teaches a “hot electron generation unit [which] includes a Schottky junction.” Office Action at page 3. However, after carefully reviewing the cited portions of Hannah et al., Applicants can find no mention of the teachings relied upon by the Examiner. Accordingly, since the reference is silent as to the claimed Schottky junction, Applicants submit that claim 5 is also distinguishable over Hannah et al.

With respect to claim 9, the Examiner asserts that “claims 9-13 contain the similar limitation as previously discussed in claims 1-7,” and thus, presumably, contends that these claims are rejected for reasons discussed above in regard to claims 1-7. The Examiner did not otherwise address the substance of claims 9-13. Claims 9-13, however, recite limitations which are not present in claims 1-7. Accordingly, the Examiner’s rationale for rejecting claims 9-13 is misplaced, and the Section 102(e) rejection with respect to these claims should be withdrawn at least for this reason.

Moreover, claim 9 recites a magnetic memory comprising, among other things, a first magnetic layer, a first non-magnetic layer formed on the first magnetic layer, and a second magnetic layer formed on the first non-magnetic layer. In addition, a first insulation film is formed on the second magnetic layer. Thus, the claimed first insulation film is formed on first and second magnetic layers. As shown in Fig. 10 of Hannah et al., however, tunneling oxide or bandgap layer 502 is provided on a single “very hard magnetic layer” 802. Tunneling oxide or bandgap layer 502 is not provided on any other magnetic layers. Accordingly, Hannah et al. also fails to teach the claimed “first insulation film formed on the second magnetic layer,” as recited in claim 9.

In light of the above-described deficiencies of Hannah et al., independent claims 1, 5, 8 and 9 are allowable over the Hannah et al., and claims 2-4, 6, 7, and 10-13 are allowable at least due to their corresponding dependence from claims 1 and 9.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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